C. Mel Lytle, PhD

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Qualified By

Dr. Mel Lytle has worked in the water and natural resources field in both the United States and Latin America for over 17 years. After graduating in 1994 with his Ph.D. from Brigham Young University, Dr. Lytle completed a three-year Post-doctoral Fellowship at the University of California Berkeley. Since that time, his professional experience has advanced to the senior-management level while working in both private consulting and public sectors. Work experience has involved water right investigations; water supply development; surface & groundwater resources planning; conjunctive use & groundwater recharge; lake, wetland & watershed assessment, restoration & management; passive wastewater treatment, storm water and groundwater quality. Dr. Lytle has broad teaching experience, a solid publication history and is a frequent invited lecturer at local, national and international workshops & symposia.

Professional Experience

'02 to Present San Joaquin County, Stockton, California

County Water Resource Coordinator - Senior management-level direction in the development of consensus-based water resources planning, project development, design and implementation together with surface & groundwater quality investigations to fulfill regional water management program directives established by the County Board of Supervisors and other local & regional authorities. In addition, responsibility for water right investigations, expert witness and legislative advocacy for County interests at local, State and Federal levels.

'00 to '02 Cooper & Lake Environmental, Inc. , Tracy, California

Principal - Project Focus: Surface water quality, lake restoration, groundwater contamination, storm water & watershed assessments, wetland ecology, treatment wetland feasibility & design in US and Latin America.

'98 – '00 David Evans and Associates, Inc., San Ramon, California

Senior Scientist - Project Focus: Wetland ecology, storm water & watershed quality monitoring & assessment, wetland delineation/mitigation and restoration, treatment wetland investigations in US and Latin America.

'95 –'98 Department of Plant and Microbial Biology, University of California, Berkeley, California

Post-doctoral Fellow - Research Focus: Fresh and saline wetland functional analysis, design and construction, Plant eco-physiology, phyto-remediation, biogeochemical processes and x-ray speciation of bio-accumulated trace metals in aquatic species. Lecturer: Environmental Biology.

'86 – '94 Departments of Botany and Agronomy, Brigham Young University, Provo, Utah

Graduate Research & Teaching Assistant - Research Focus: Plant eco-physiology and biogeochemical cycling of trace metals in fresh, saline and hyper-saline wetlands in the Great Basin, x-ray speciation of bio-accumulated trace metals and crop nutrient uptake mechanisms Lecturer: Plant Physiology, Plant Physiology Lab, Principles of Biology Lab, Biology for Honors and Soil Science, Soil Fe rtility, Saline & Sodic Soils Laboratories.

'82 – '86 R. Bogetti Farms, Inc., Tracy, California

Farm Manager - Supervised all cultural practices, budgeting and personnel on row-crop farms totaling over 2,000 acres in the Delta and San Joaquin Valley of California.

Formal Education

Ph.D. (1994) - Department of Botany and Range Science, Brigham Young University, Provo, Utah. **Dissertation**—*Heavy Metal Bioaccumulation in Great Basin Submersed Aquatic Macrophytes.*

M.S. (1990) - Department of Agronomy and Horticulture, Brigham Young University, Provo, Utah. **Thesis**—*Iron Deficiency Stress Response of Various C_3 and C_4 Grain Crop Genotypes.*

B.S. (1988) - Department of Agronomy and Horticulture, Brigham Young University, Provo, Utah

High School Graduate (1977) – Glacier High School, Highline School District, Seattle, Washington

Continuing Education

- University of California Davis Extension, Sacramento, California
  - Groundwater Law, Hydrology and Management (2003)
  - Facilitating for Groups in Conflict (2005)
  - Fluvial Geomorphology (2005)
  - Salmonid Biology (2006)

- Groundwater Resources Association of California, Sacramento, California
  - "Artificial Groundwater Recharge: Nexus of Quantity and Quality in California (2005)

- Continuing Legal Education - International, San Francisco, California
  - California Water Law & Policy (2004)
  - California Water Law & Policy (2005)
  - California Water Law & Policy (2006)
  - California Water Law & Policy (2007)

Project and Program Experience

2002 – Present San Joaquin County Flood Control and Water Conservation District, Stockton, California

The Water Resource Coordinator is primarily responsible for the coordination and management of San Joaquin County's water interests and through Division staff & contracted consultants prepares, evaluates and administers the annual program and personnel budgets for the San Joaquin County Public Works - Water Resource Division, the Flood Control and Water Conservation District Zone 2, the Mokelumne River Water and Power Authority and 11-member agency Groundwater Banking Authority.

Major duties and responsibilities include efforts to obtain supplemental surface water supply through project leadership and by maintaining liaison among numerous public jurisdictions, agencies, private entities, and the general public to encourage cooperation on all water issues and to resolve potential conflicts through a consensus-based approach. Responsibilities have also included the management and formulation of coalitions, authorities, and MOU with other agencies for the development of water resource projects, plans, studies & programs and representation of the County's interests in federal, state, and local governing boards, committees and task forces and when necessary provided testimony at federal, state, regional and local proceedings to describe and defend the County's water interests.

Projects, Studies & Programs

Eastern San Joaquin County Integrated Regional Water Management Plan & Program EIR – Initiated and provided project management, direction and coordination for the development of an integrated regional water management plan and for the Eastern San Joaquin Integrated Conjunctive Use Program. A three-year effort of the Northeastern San Joaquin County Groundwater Banking Authority and the collaboration of over 40 stakeholder agencies to develop objectives, plans and strategies to better manage water resources in a critically over-drafted groundwater basin (Project Timetable 2005-2008; Project Budget $1.35 million).

Freeport Element of the American River Use Strategy Project Feasibility Study – Initiated and provided project management, direction and coordination for the development of feasibility analysis for an engineering preferred project alternative centered on use of unassigned pipeline capacity in the East Bay Municipal Utility District Freeport Regional Water Project to wheel American River water under San Joaquin County's water right filing 29657 (Project Timetable 2007-2009; Project Budget $750,000).

Mokelumne River Regional Water Storage and Conjunctive Use Project Feasibility Study & Project EIR (MORE WATER) - Initiated and provided project management, direction and coordination in concert with the US Bureau of Reclamation to complete engineering feasibility and environmental documentation for a new off-stream storage facility to capture flood flows from the Mokelumne River and regulate water supply to an integrated system of conjunctive use facilities providing additional storage capability, groundwater recharge, water banking and water supply reliability for San Joaquin County and the Bay-Delta Region of California (Project Timetable 2003-2017; Project Budget~$4.5 mil).

U.S. Geological Survey Joint Salinity Study – Initiated and provided project management, direction and coordination of a five-year, $3 million regional groundwater salinity intrusion study in San Joaquin County jointly-sponsored by the Northeastern Groundwater Banking Authority, the California State Department of Water Resources and the US Geological Survey.

Eastern San Joaquin Basin Groundwater Management Plan – Initiated and provided management, direction and coordination for the development of a regional groundwater management plan for the Eastern San Joaquin Sub-basin. An 18-month effort of the Northeastern San Joaquin County Groundwater Banking Authority led to the collaboration of over 35 stakeholder agencies to develop basin-wide objectives and plans to better manage groundwater resources (Project Timetable 2002-2004; Project Budget $600,000).

San Joaquin County Flood Control and Water Conservation District Groundwater Monitoring Network Project – Initiated and provided management and coordination for a detailed hydrogeologic investigation conducted over several years and the construction of depth-specific monitoring wells at locations along the projected saline front within San Joaquin County to improve the accuracy of groundwater quality data, assess the vertical and lateral extent of saline water migration, determine the source of the saline water and understand the hydrogeologic properties in the area of concern (Project Timetable 2003-2005; Project Budget $550,000).

San Joaquin County Water Management Plan - Provided management and coordination for the completion and adoption of the San Joaquin County Water Management Plan in 2002. This plan has acted as a steering document that sets forth water resource project alternatives designed to meet 2030 water supply demands. The overall goal of the plan is three-fold: (1) identify viable water supply and conjunctive use options in order to prevent further overdraft of the Eastern San Joaquin Groundwater Sub-basin, (2) retard or eliminate the degradation of groundwater supplies due to saline water intrusion from the Bay-Delta, and (3) meet future water demand for the entire county (Project Budget $650,000).

2000 - 2002 *Cooper & Lake Environmental Inc., Tracy, California*
Responsible for the development and management of water resource related projects including treatment wetlands, lake, surface water, groundwater and watershed projects for private sector clients and public agencies.

Projects
Phase I Evaluation of the La Oroya Township Treatment Wetlands, Doe Run Peru Mining Company, La Oroya, Peru – Provided reconnaissance-level feasibility assessments & design evaluations for wetland systems to treat municipal wastewater from the Andean Township of La Oroya, Peru (elevation 3,800 m).

Las Virgenes Creek Watershed Investigation, Los Angeles County, California – Performed a review of historic water quality data and reports of the Las Virgenes Creek watershed. Performed a site review of point and non-point sources of pollution including storm water, municipal wastewater and industrial sources to determine BMPs utilization program. Determine the effectiveness of the existing BMPs based on available analyses for the reduction of listed 303-(d) contaminants for inclusion in watershed restoration program.

Phase I Environmental and Feasibility Assessments for Wetland System Development at the Cuajone Mine, Southern Peru Copper Mining Company, Tacna, Peru – Provided environmental, feasibility & design evaluations for wetland systems to treat potential acid mine drainage from the Cuajone Mine river redirection and overburden projects.

Dos Lagos Lake Quality Monitoring and Analysis Program, Corona, California – Conducted quantitative limnology studies and established a monitoring program including thermal stratification, dissolved oxygen, mixing, water column oxygen (WOD) and sediment oxygen demand (SOD) of two lakes for the development of a Lake Quality Restoration & Management Plan for a large multi-phased development in Southern California.

Feasibility Assessments for Tertiary Treatment of Municipal Wastewater, Vacaville, California – Conducted project regulatory and feasibility assessments for the development of an integrated treatment wetland system to provide tertiary treatment of municipal wastewater discharged within a proposed residential development.

1998 - 2000 *David Evans and Associates, Inc., San Ramon, California*
Senior Scientist and Project Manager responsible for water resource related projects for local, national and international clients including treatment wetlands, water quality and watershed projects.

Projects
Williamson River Delta Restoration Environmental Assessment, Klamath Falls, Oregon – Evaluated potential impacts of the 4,800-acre Williamson River Delta wetland restoration program on water, wetland and watershed quality issues to Upper Klamath Lake, Oregon for the U.S. Department of Agriculture Natural Resources Conservation Service in partnership with The Nature Conservancy.

Laguna and Coyote Creek Watershed Quality Monitoring Program, Richland Development Company, Moraga, California – Developed and conducted a quality assurance storm water monitoring program at the Palos Colorados development to assess the impact of storm water contaminants in local watersheds, Moraga, California.

Klamath Straits Drain Wetland System Feasibility Analysis and Site Assessments, Klamath Falls, Oregon –Conducted feasibility analysis and site assessments for an approx. 3,300-acre wetland treatment system to treat agricultural wastewater from the Klamath Straits Drain, Lost River and Lower Klamath Basin near Klamath Falls, Oregon for the U.S. Bureau of Reclamation.

Watershed Quality Investigations of the Klamath and Lost Rivers, Klamath Falls, Oregon – Conducted hydrological, conveyance, wetland and best management practice evaluations for the improvement of water quality in the Lower Klamath and Lost River watersheds, Oregon for the U.S. Bureau of Reclamation.

Treatment Wetland Redesign Assessments, Santa Rosa and Santiago Mines, Buenaventura Mining Company, Peru – Conducted design evaluations of a treatment wetland that receives acid-mine water from the Santa Rosa and Santiago gold mines at an elevation of approx.15,000 ft. in the Andes Mountains for the Buenaventura Mining Company, Arequipa, Peru.

1995 -1998 *Department of Plant and Microbial Biology, University of California, Berkeley*
Post-doctoral Fellow responsible for the development and implementation of quantitative, multi-year field studies of constructed wetlands located throughout the United States to determine seasonal changes in treatment effectiveness together with other associated research.

Field Studies
Electric Power Research Institute Constructed Wetland Research Program - Conducted a two-year quantitative wetland field study, sponsored by the Electrical Power Research Institute (EPRI), to evaluate the function and engineering design of wetland systems for the remediation of acid mine drainage, coal-ash leachate and oil refinery wastewater. This study was conducted at monthly intervals over two-years at several constructed wetland systems including: the Chevron Water Enhancement Wetland, Chevron Oil Refinery (Richmond, California), the Allegheny Power Passive Treatment Wetland (Springdale, Pennsylvania) and the Tennessee Valley Authority Widows Creek Wetland and Coal Mine Wetlands (Flatrock, Alabama).

Tulare Lake Drainage District Wetland System Feasibility Analysis, Design and Construction - Provided technical design criteria, directed construction and planting of a 10-cell wetland system in the Tulare Lake Basin, California. This 5-acre wetland was planted with eight different wetland plant species, which was designed to test the concept that wetland plants may remediate toxic selenium in agricultural tile-drainage water via biological volatilization. This collaborative effort was sponsored by the Tulare Lake Drainage District, J.G. Boswell & Company, University of California Salinity Drainage Task Force, and the California State Department of Water Resources.

Tulare Lake Drainage District Wetland System Monitoring Study - Conducted a 12-month quantitative field study, sponsored by the UC Salinity Drainage Task Force and the California State Department of Water Resources, to determine the seasonal fate, cycling and chemical speciation of selenium and other trace elements from contaminated agricultural drainage water in the Tulare Lake Drainage District Flow-Through Constructed Wetland.

1990 - 1994 *Department of Botany and Range, Brigham Young University, Provo, Utah*

Field Studies
Trace Metal Bioaccumulation in Great Basin Wetland and Watershed Habitats - Conducted a two-year quantitative field study, sponsored by the Wildlife Society, of the Fish Springs National Wildlife Refuge, Bear River Migratory Bird Refuge, Clear Lake Wildlife Management Area wetlands, the Provo and Sevier River watersheds to determine the extent of heavy metal bioaccumulation among aquatic plant food species utilized by waterfowl. This study included the monthly monitoring and speciation of heavy metals within wetland plant tissues, surface water, sediments and wildlife tissues to determine their biogeochemical cycling, fate and potential environmental impact to feeding waterfowl species.

Lecturer, Witness and Advocacy Experience
2002 – Present San Joaquin County Flood Control and Water Conservation District, Stockton, California

State and Federal Congressional Hearing Testimony:
"Testimony on HR 3812 (Sponsor Congressman Richard Pombo) authorization for Mokelumne River Feasibility Study" before US Senate Committee on Energy and Natural Resources, Subcommittee on Water and Power, March 30, 2006. Washington, DC
"Testimony on Senate Bill 350 (Sponsor State Senator Mike Machado) Restoration of the San Joaquin River" before California State Assembly Committee on Water, Parks and Wildlife, June 28, 2005. Sacramento, CA
"Testimony on HR 4045 (Sponsor Congressman Richard Pombo) authorization for Mokelumne River Feasibility Study" before US House Subcommittee on Water & Power, May 18, 2004. Washington DC
"Testimony on Senate Bill 833 (Sponsor State Senator Mike Machado) Eastern Water Alliance Joint Powers Agency" before California State Senate Committee on Agriculture and Water Resources, April 2003. Sacramento, CA

Invited Lectures:
"San Joaquin County Integrated Regional Water Management Planning" Greater Stockton Chamber of Commerce, September 2005, Stockton, California
"Conjunctive Management Program in San Joaquin County: Value and Benefits" California State Department of Water Resources, January 2005, Sacramento, California
"Groundwater Management Planning for the Eastern San Joaquin Basin" San Joaquin County Farm Bureau Federation, September 2004, Stockton, California
"San Joaquin County Water Resource Management Planning Update" Stockton Area Business Council, August 2004, Stockton, California
"A Consensus-based Approach to Groundwater Management Planning for the Eastern San Joaquin Basin" Association of California Water Agencies Conference, December 2003, San Diego, California
"San Joaquin County Regional Water Supply Projects" San Joaquin Valley Engineers Association, September 2003, Stockton, California
"Future Water Supply for San Joaquin County" American Public Works Association, November 2002, Sacramento, California
"How to Succeed in Groundwater Management" California Water Policy Conference - 12, Los Angeles, California, October 2002
"San Joaquin County Water Management Issues" California State Department of Water Resources – US Geological Survey Joint Technical Workshop, Sacramento, California, September 2002

2000 - 2002 *Cooper & Lake Environmental Inc., Tracy, California*
Invited Lectures:
"Potential Use of Treatment Wetlands for the Treatment of Domestic Sewage and Industrial Wastewaters at High Altitudes." Doe Run Peru Mining Technical Presentation, La Oroya, Peru, September 2001.

1998 - 2000 *David Evans and Associates, Inc., San Ramon, California*

Invited Lectures:

"Use of Constructed Wetland Systems to Treat Mine and Mineral Processing Waters." 5th International Conference on Clean Technologies for the Mining Industry, May 2000, Santiago, Chile.

"Utilizacion de los humedales en el tratamiento de aguas residuals domesticos e industriales." Conferencia: Tecnologias de proteccion ambiental, Universidad Nacional Agraria La Molina, Setiembre 1999, Lima, Peru.

"Sustainable Water Quality Treatment Alternatives Using Watershed Restoration and Preservation." 5th Annual GCOE Environmental Solutions Conference and Trade Show, May 1999, Anaheim, California.

1995 - 1998 *Department of Plant Biology, University of California, Berkeley*

Invited Lectures:

"Exploiting Constructed Wetland Biogeochemistry for Applied Phytoremediation Purposes." Department of Chemistry, University of Texas at El Paso. October 1998, El Paso, Texas.

"Constructed Wetland Treatment System Biogeochemical Processes." Allegheny Power Company Constructed Wetlands for Industrial Wastewater Treatment Workshop. July 1998. New Kensington, Pennsylvania.

"Plant Establishment, Growth and Biomass Production in Flow-Through Treatment Wetlands." UC Salinity Drainage Program Annual Meeting, April 1998. Sacramento, California.

"Selenium Remediation by Flow-Through Wetlands: Design, Construction and Initial Findings." 10th Annual Agroforestry Conference, Sequential Reuse of Drainage Water for Salt and Selenium Management, October 1997. Hanford, California.

"XAS Analysis of Plant-based Trace Element Detoxification." 24th Annual SSRL User's Conference Workshop, October 1997. Stanford Synchrotron Radiation Laboratory, Stanford, California.

"The Role of Wetland Plants in Trace Element Remediation in Constructed Wetlands." Electric Power Research Institute, Water Toxics Assessment and Watershed Management Business Area Council Meeting, June 1997. Golden, Colorado.

"Potential Use of Soft X-ray Radiation in Phytoremediation Research." Molecular Environmental Research in the Soft X-ray Region Workshop, March 1997. Lawrence Berkeley National Laboratory, Berkeley, California.

"Recent Applications of XAS to the Emerging Science of Phytoremediation." 23rd Annual SSRL User's Conference, October 1996. Stanford Synchrotron Radiation Laboratory, Stanford, California.

"The Potential Use of Flow-through Wetlands for Selenium Remediation." Tulare Lake Drainage District Annual Board of Directors Meeting, December 1995. Corcoran, California.

1990 - 1994 *Department of Botany and Range Science, Brigham Young University, Provo, Utah*

Lectures:

"Seasonal changes in valence and chemical speciation of bioaccumulated manganese in Potamogeton pectinatus." 14th Missouri Symposium, April 19-22, 1995. University of Missouri, Columbia, Missouri.

"Chemical speciation of manganese in exhaust, soil and plants impacted by an unleaded fuel additive, MMT." ASA, SSSA and CSSA 86th Annual Meeting, November 13-18, 1994. Seattle, Washington.

"X-ray absorption spectroscopy -- an analytical tool for element chemical speciation providing enhanced characterization of hazardous wastes." 8th Annual Regional Environmental Business & Management Conference, October 11-13, 1994. Denver, Colorado.

"Manganese accumulation along Utah roadways: A possible indication of motor vehicle exhaust pollution." AAAS Pacific Division Annual Meeting, June 12-16, 1994, San Francisco, California.

"Trace metal accumulation and potential trophic channeling in Great Basin submersed aquatic plants." Utah State University, Spring Plant Ecology Conference, May 20-21, 1994. Bear River Lodge, Logan, Utah.

"Manganese and iron accumulation by Potamogeton pectinatus L., A potential trophic channeler in freshwater wetlands." Ecological Society of America Annual Meeting, July 31-August 4, 1993. Madison, Wisconsin.

"Metabolic stress induced by organomercurials in a free floating aquatic macrophyte, Lemna minor L." Ecological Society of America Annual Meeting, August 9-13, 1992. Honolulu, Hawaii.

Publication History

35. B. Nakagawa and CM Lytle (2008) Establishment of a Stakeholder-Supported Management Framework and Conditions Scale for the Recovery of an Over-drafted Ground Water Basin. (In Preparation).

34. Ye, ZH, SN Whiting, JH Qian, CM Lytle, Z-Q Lin, and N Terry 2001. Trace element removal from coal ash leachate by a 10-year-old constructed wetland. **Journal of Environmental Quality 30, 1710-1719.**

33. Ye, ZH, SN Whiting, Z-Q Lin, CM Lytle, JH Qian, and N Terry 2001. Removal and distribution of Fe, Mn, Co, and Ni within a Pennsylvania constructed wetland treating coal combustion by-product leachate. **Journal of Environmental Quality 30, 1464-1473.**

32. Lytle, CM, BN Smith, MS Hopkin, LD Hansen and RS Criddle (2000) Oxygen-dependence of metabolic heat production in the appendix tissue of the voodoo lily (Sauromatum guttatum Schott). **Thermochimica Acta 5112, 1-6.**

31. de Souza MP, Lytle CM, Mulholland MM, Otte ML, Terry N 2000 Selenium assimilation and volatilization from dimethylselenoniopropionate by Indian mustard. **Plant Physiology 122, 1281-1288.**

30. Lytle, CM FW Lytle, J-H Qian, and N Terry (2000) Manganese removal and detoxification by cattail (Typha latifolia) grown in a constructed treatment wetland system. *In* **Stanford Synchrotron Radiation Laboratory 1999 Activity Report, Stanford University, Stanford, CA.**

29. Lytle, CM and C Jofre (2000) Use of constructed wetland systems to treat mine and mineral processing waters. M.A. Sanchez, F. Vergara and S.H. Castro, University of Concepcion (eds). *In* **Proceedings of the V International Conference on Clean Technologies for the Mining Industry, Volume I, Santiago – Chile, May, 2000, pgs. 161-171.**

28. Jones, AR, CM Lytle, RL Stone, LD Hansen and BN Smith (2000) Methylcyclopentadienyl manganese tricarbonyl (MMT), plant uptake and effects on metabolism. **Thermochimica Acta 5113, 1-6.**

27. Lytle, C. M., 2000. Water Quality Data Review and Wetland Size Estimate for the Treatment of Wastewaters from the Klamath Straits Drain. *In* **U.S. Bureau of Reclamation Technical Memorandum, July 2000.**

26. Pilon-Smits, EAH S Hwang, CM Lytle, Y Zhu, JC Tai, RC Bravo, Y Chen, T Leustek, and N Terry (1999) Overexpression of ATP sulfurylase in Indian Mustard (*Brassica juncea*) leads to increased selenate uptake, reduction and tolerance. **Plant Physiology, 119, 123-132.**

25. Lytle, CM (1999) Treatment Wetlands: Effective Cleanup of Contaminants in Mine/Mineral Processing Waters. **Latin America Mining Record Vol. 6, 22-23.**

24. Lytle, CM FW Lytle, N Yang, J-H Qian, D Hansen, A Zayed and N Terry (1998). Reduction of (CrVI) to (CrIII) by wetland plants: Potential for in situ heavy metal detoxification. **Environmental Science and Technology 32, 3087-3093.**

23. Pilon-Smits, EAH MP De Souza, CM Lytle, C Shang, T Lugo and N Terry (1998) Selenium volatilization and assimilation by hybrid Poplar (*Populus tremula x alba*) **Journal of Experimental Botany 49, 1889-1892.**

22. Lytle, CM FW Lytle and N Terry (1998) X-ray spectroscopy study of a wetland plant-based heavy metal detoxification mechanism. *In* **Stanford Synchrotron Radiation Laboratory 1997 Activity Report**, Stanford University, Stanford, CA. 259-262.

21. Zayed, A CM Lytle and N Terry (1998) Accumulation and volatilization of different chemical species of selenium by plants. **Planta 206, 284-292.**

20. de Souza, MP EAH Pilon-Smits, CM Lytle, S Hwang, J Tai, T Honma, L Yeh and N Terry (1998) Rate-limiting steps in selenium assimilation and volatilization by Indian mustard. **Plant Physiology 117:1487-1494.**

19. Zayed, A CM Lytle, J-H Qian and N Terry (1998) Chromium accumulation, translocation and speciation in vegetable crops. **Planta 206, 293-299.**

18. Lytle, CM FW Lytle, A Zayed and N Terry (1997) X-ray absorption spectroscopy of bioaccumulated chromium in selected vegetable crops and water hyacinth. *In* **Stanford Synchrotron Radiation Laboratory 1996 Activity Report,** Stanford University, Stanford, CA. **356-357.**

17. Smith, BN and CM Lytle (1997) Air Pollutants. *Invited chapter in:* M.V.N. Prasad (ed.) **Plant Ecophysiology.** Chapter 12. John Wiley & Son, New York. **p. 375-392.**

16. Lytle, CM FW Lytle and BN Smith (1996) Use of XAS to determine the speciation of bioaccumulated manganese in *Potamogeton pectinatus* (Sago pondweed). **Journal of Environmental Quality 25, 311-316.**

15. Lytle, CM FW Lytle, A Zayed and N Terry (1996) Phytoconversion of Cr^{6+} to Cr^{3+} by Water Hyacinth — A Case for Phytoremediation. **Bulletin of the Ecological Society of America 77, 235.**

14. Lytle, CM and BN Smith (1995) Seasonal nutrient cycling in *Potamogeton pectinatus* of the lower Provo river. **Great Basin Naturalist 55, 164-168.**

13. Lytle, CM, BN Smith and CZ McKinnon (1995) Manganese accumulation in soil and plants along Utah roadways: A possible indication of motor vehicle exhaust pollution. **Bulletin of the Ecological Society of America 76, 163.**

12. Lytle, CM, BN Smith and CZ McKinnon (1995) Manganese accumulation along Utah roadways: a possible indication of motor vehicle exhaust pollution. **The Science of the Total Environment 162, 105-109.**

11. Lytle, CM, CZ McKinnon and BN Smith (1994) Roadside manganese in soil and plants. **Naturwissenschaften 81, 509-510.**

10. Lytle, CM and FW Lytle (1994) X-ray absorption spectroscopy an analytical tool for element chemical speciation providing enhanced characterization of hazardous wastes. *In* **Proceedings of the Colorado Hazardous Waste Management Society 8th Annual Regional Environmental Conference. Denver, Colorado, Report No. 23.**

9. Smith, BN CM Lytle and LD Hansen (1994) Predicting plant growth rates by dark respiration: an experimental approach. USDA Forest Service Intermountain Research Station. Wildland Shrub and Arid Land Restoration Symposium. US **Department of Forestry, General Technical Report INT-GTR-315, 243-245.**

8. Lytle, CM and BN Smith (1993) Manganese and iron accumulation by *Potamogeton pectinatus* L.: A potential trophic channeler in freshwater wetlands. **Bulletin of the Ecological Society of America 74, 339.**

7. Smith, BN CM Lytle, LD Hansen, J Lipp and H. Ziegler (1992) Isotopic fractionation respiration and growth in seedlings of cold-desert shrubs. **Bulletin of the Ecological Society of America 73, 347-348.**

6. Smith, BN CM Lytle and LD Hansen (1992) Oxygen availability and respiration rate in voodoo lily appendix tissue at anthesis. **American Journal of Botany 79, 107-108.**

5. Lytle, CM and BN Smith (1992) Metabolic stress induced by organomercurials in a free-floating aquatic macrophyte, *Lemna minor* L. **Bulletin of the Ecological Society of America 73, 257.**

4. Smith, BN CM Lytle, LD Hansen, J Lipp and H. Ziegler (1992) Respiration and plant growth in seedlings of cold desert shrubs. USDA Forest Service Intermountain Research Station. Ecology and Management of Riparian Shrub Communities. **US Department of Forestry, General Technical Report INT-289, 190-93.**

3. Lytle, CM VD Jolley and JC Brown (1991) Iron deficiency stress response of various C_3 and C_4 grain-crop genotypes: Strategy II mechanism evaluated. **Journal of Plant Nutrition 14, 341-362.**

2. Brown, JC VD Jolley and CM Lytle (1990) Comparative evaluation of iron solubilizing substances (phytosiderophores) released by oat and corn: iron-efficient and iron inefficient plants. **Plant and Soil 130, 157-163.**

1. Lytle, CM VD Jolley and JC Brown (1990) Iron-efficient and iron-inefficient oat and corn respond differently to iron-deficiency stress. **Plant and Soil 130, 165-172.**

Committees, Societies and Organizations
Member, Association of California Water Agencies Committee on Local Government
Secretary, San Joaquin County Advisory Water Commission
Chair, 2003 Water Environment Research Foundation Project Subcommittee *for Innovative Metals Removal for Urban Storm water Treatment* (Project Budget $650,000)
County Engineers Association of California
National Ground Water Association

Awards, Scholarships and Recognitions
1988 Department of Agronomy Award
1992 Julia Greenwell Award
1992 Botanical Science Scholarship
1994 S. Paul and Hilda F. Stewart Scholarship
1993 Department of Botany & Range Award
1995 Sigma Xi Outstanding Dissertation of the Year

San Joaquin Council of Governments Regional Excellence Awards:
2003 Judges Award for the San Joaquin County Water Management Plan
2005 Development Honorable Mention for the Eastern San Joaquin Groundwater Management Plan
2008 Development Award for the Eastern San Joaquin Integrated Regional Water Management Plan

Personal Interests
Outdoor sports, saltwater sport fishing, hiking, photography, gardening and watercolor painting

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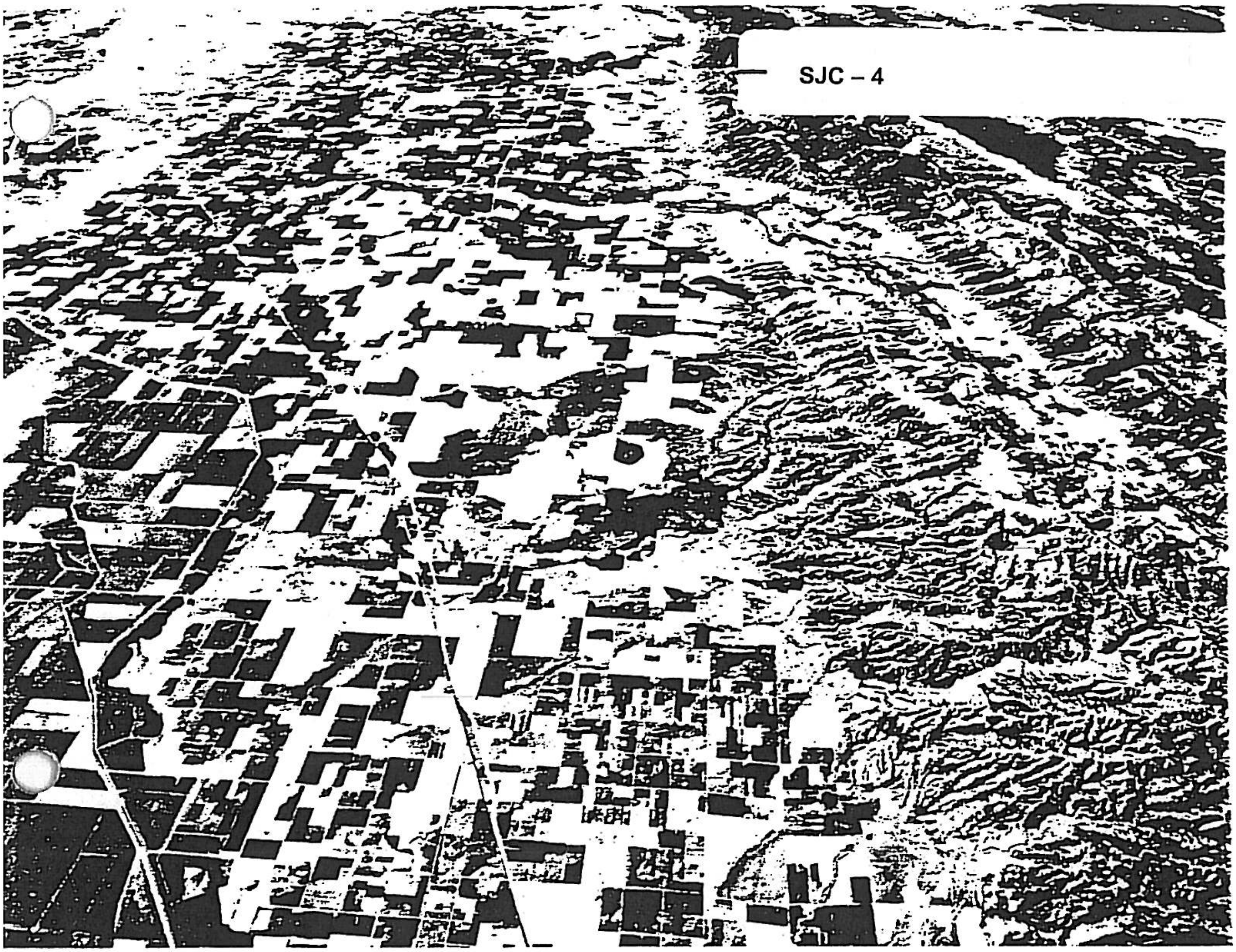


save water
DWR

Ground Water Basins in California

A Report to the Legislature in Response to Water Code Section 12924

Bulletin 118-80
January 1980

Basins With Special Problems

Only one basin with special problems has been identified in the Sacramento Basin Hydrologic Study Area.

Sierra Valley Basin. In the Sierra Valley, which is primarily a cattle area, Sierra Valley ground water is threatened by the drilling of large agricultural wells and an impending population growth. Pressures for housing subdivisions because of population growth in Nevada have increased. Some existing wells have lost considerable artesian head. In fact, artesian head in some areas has dropped below ground surface, thereby severely complicating the problem of providing winter water for cattle. The basin is situated in Sierra and Plumas Counties.

San Joaquin Basin Hydrologic Study Area

Figure 10 presents the 39 ground water basins in the San Joaquin Basin Hydrologic Study Area. Table 6 shows those basins and identifies eight basins now indicated to be in overdraft.

Ground Water Basin Boundaries

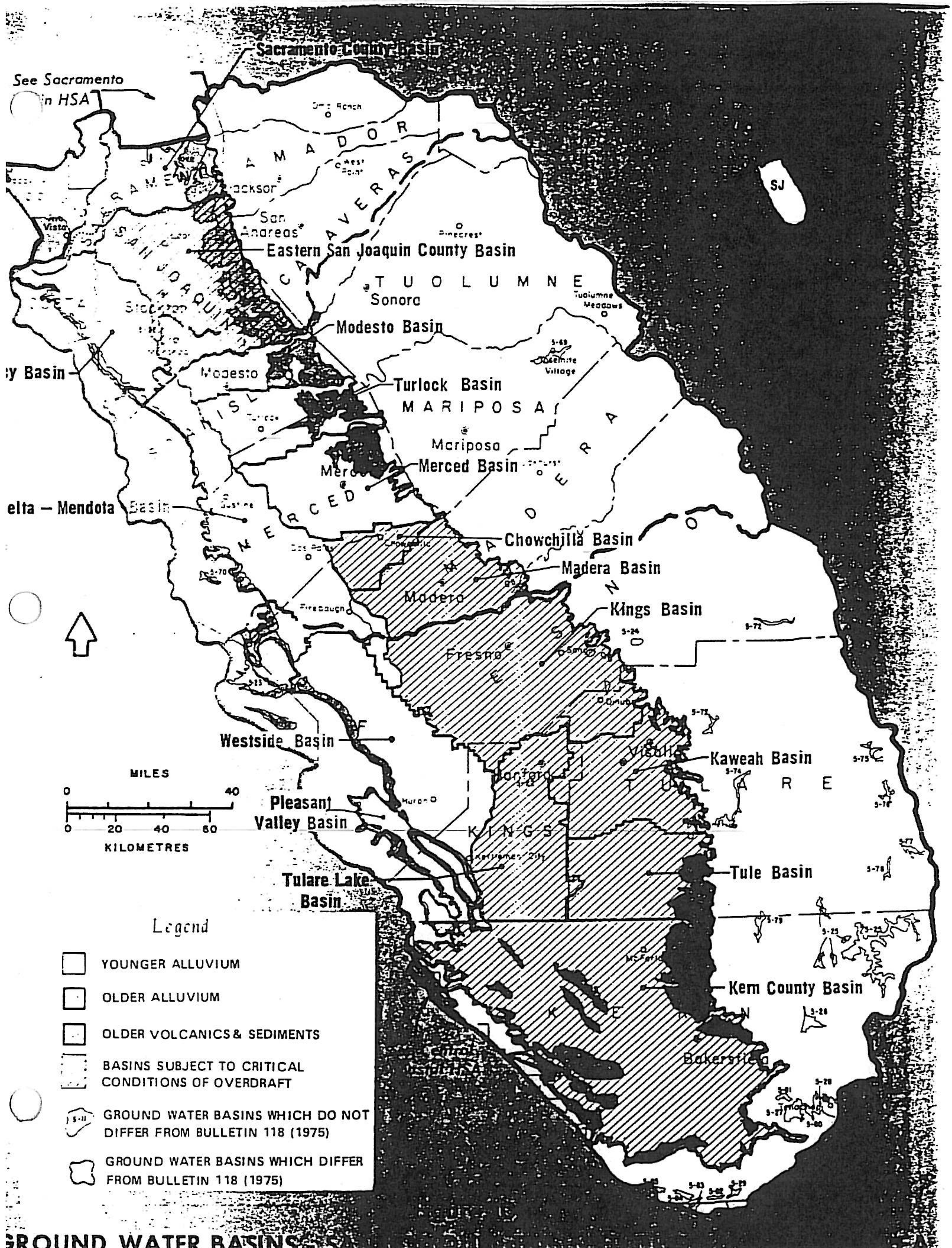
The Sacramento County Basin extends into this hydrologic study area but is discussed under the Sacramento Basin Hydrologic Study Area.

Local views included both leaving the San Joaquin Valley as one basin and identifying each existing water agency boundary as a ground water basin boundary.

The San Joaquin Valley is divided into 15 separate basins, largely based on political considerations. Division into these basins is essential for ground water management, since management of the valley as a whole is impractical. Division along all existing water agency boundaries would result in basins with technical problems in the conduct of management activities.

Eastern San Joaquin County Basin. The boundaries are the county line on the north, the San Joaquin River on the west, the county line and the Stanislaus River on the south, and the edge of the alluvium on the east. The basin includes a portion of Stanislaus County in the southeast portion. The specific boundaries were endorsed by local water agency personnel.

Modesto Basin. The Modesto Basin lies between the Stanislaus and Tuolumne Rivers, from the San Joaquin River on the west to the Sierra Nevada foothills on the east. The basin comprises land in the Modesto Irrigation District, the southern two-thirds of the Oakdale Irrigation District, and lands to the east in the unincorporated area called Cooperstown.



GROUND WATER BASINS - SA

Table 6

GROUND WATER BASINS IN THE
SAN JOAQUIN BASIN HYDROLOGIC STUDY AREA

Basin Name	Bulletin 118 (1975) No.	Evidence of Overdraft
EASTERN SAN JOAQUIN COUNTY BASIN		yes
San Joaquin Valley (portion)	5-22	(b)
MODESTO BASIN		
San Joaquin Valley (portion)	5-22	--
TURLOCK BASIN		
San Joaquin Valley (portion)	5-22	--
TRACY BASIN		
San Joaquin Valley (portion)	5-22	--
MERCED BASIN		
San Joaquin Valley (portion)	5-22	--
CHOWCHILLA BASIN		yes
San Joaquin Valley (portion)	5-22	(d)
MADERA BASIN		yes
San Joaquin Valley (portion)	5-22	(d)
DELTA-MENDOTA BASIN		
San Joaquin Valley (portion)	5-22	--
KINGS BASIN		yes
San Joaquin Valley (portion)	5-22	(d)
KAWEAH BASIN		yes
San Joaquin Valley (portion)	5-22	(d)
TULARE LAKE BASIN		yes
San Joaquin Valley (portion)	5-22	(d)

Table 6 (Continued)

Basin Name	Bulletin 118 (1975) No.	Evidence of Overdraft
TULE BASIN		yes
San Joaquin Valley (portion)	5-22	(d)
PLEASANT VALLEY BASIN		
San Joaquin Valley (portion)	5-22	--
WESTSIDE BASIN		
San Joaquin Valley (portion)	5-22	--
KERN COUNTY BASIN		yes
San Joaquin Valley (portion)	5-22	(e)
PANOCHE VALLEY	5-23	--
SQUAW VALLEY	5-24	--
KERN RIVER VALLEY	5-25	--
WALKER BASIN CREEK VALLEY	5-26	--
CUMMINGS VALLEY	5-27	--
TEHACHAPI VALLEY WEST	5-28	--
CASTAC LAKE VALLEY	5-29	--
YOSEMITE VALLEY	5-69	--
LOS BANOS CREEK VALLEY	5-70	--
VALLECITOS CREEK VALLEY	5-71	--
CEDAR GROVE AREA	5-72	--
THREE RIVERS AREA	5-73	--
SPRINGVILLE AREA	5-74	--
TEMPLETON MOUNTAIN AREA	5-75	--
MANACHE MEADOWS AREA	5-76	--
SACATOR CANYON VALLEY	5-77	--
ROCKHOUSE MEADOW VALLEY	5-78	--
INNS VALLEY	5-79	--
BRITE VALLEY	5-80	--
BEAR VALLEY	5-81	--
CUDDY CANYON VALLEY	5-82	--
CUDDY RANCH AREA	5-83	--
CUDDY VALLEY	5-84	--
MILL POTRERA AREA	5-85	--

(b) Water Code Section 12924 Public Hearing Record: Statement of Richard W. Dickenson, San Joaquin County Flood Control and Water Conservation District.

(d) DWR District Report on Mid-Valley Canal Areal Study, publication pending.

(e) Original data presented in speech "Dust Bin of History" by Ronald B. Robie, Director, Department of Water Resources, to State Board of Food and Agriculture on February 1, 1979.

Tule Basin. The Tule Basin is generally bounded on the west by the Tulare County line, excluding those portions of Tulare Lake Basin Water Storage District and Sections 29 and 30 of Township 23 South, Range 23 East, that are west of Homeland Canal. The northern boundary of the basin follows the northern boundaries of Lower Tule Irrigation District and Porterville Irrigation District and the southern boundary of Lindmore Irrigation District, the eastern boundary is at the edge of the alluvium, and the southern boundary is the Tulare-Kern County Line.

Pleasant Valley Basin. This basin includes the older and younger alluvium of the San Joaquin Valley north of the Kern County line and west of the Tulare Lake Basin and the Westside Basin.

Westside Basin. The Westside Basin consists mainly of lands in the Westlands Water District. Heavy pumping occurred prior to construction of the San Luis Unit of the Central Valley Project, causing ground subsidence as much as 8.5 metres (28 feet) in one area and lower ground water levels.

Kern County Basin. The Kern County Basin consists of that portion of the San Joaquin Valley in Kern County and includes the contiguous older and younger alluvium.

Basins Subject to Critical Conditions of Overdraft

Eight basins have been identified as subject to critical conditions of overdraft in the San Joaquin Basin Hydrologic Study Area.

Eastern San Joaquin County Basin. This basin for many years has experienced overdraft, the adverse effects of which include declining water levels that have induced the movement of poor quality water from the Delta sediments eastward near the City of Stockton. Migration of these saline waters has severely impacted the utility of ground water in the vicinity of Stockton. Wells have been abandoned and replacement water supplies have been obtained by drilling additional wells generally to the east. For partial mitigation of these adverse impacts, supplemental water from the Calaveras River through the Stockton-East Water District Aqueduct is being substituted for ground water.

To stop the easterly migration of poor quality water would require maintaining higher water levels in the basin and other measures, which, in turn, would probably reduce ground water inflow from the south. Under those higher water level conditions, the estimated supplemental water requirement would be materially greater than at the present. The exact amount of overdraft and supplemental water requirement is presently under study.

The identification of the Eastern San Joaquin County Basin as subject to critical conditions of overdraft is based on the existing overdraft and the adverse effects described above.

Chowchilla Basin. Overdraft in the basin was estimated at 62 000 cubic dekametres (50,000 acre-feet) annually in 1975, based upon the DWR Mid-Valley Canal Areal Study. Chowchilla Water District, which lies in the eastern portion of the basin, presently has a balanced water budget due to CVP deliveries from the Madera Canal and an estimated 29 600 cubic-dekametre (24,000 acre-foot) annual new water yield from the recently completed Buchanan Dam on the Chowchilla River.

However, ground water meets nearly all applied water demands in the areas to the southwest and to the north of Chowchilla Water District, and maximum ground water level declines amounted to over 2 metres (6 feet) per year during the period 1970-75. These areas are experiencing a rapid growth in irrigated agriculture. Ground water level lowering in these areas of heavy pumping is expected to induce greater subsurface flows from the Chowchilla Water District area and cause water levels there to drop.

A water quality problem has developed over the years in the southwest portion of the basin due to the reclamation of lands for agricultural expansion. The heavy pumping and application of water for leaching of salts from the soils has apparently carried those salts to the ground water.

Adverse effects from the overdraft include increasing ground water pumping lifts, costs, and energy usage, and the water quality problems. The Chowchilla Basin is identified as subject to critical conditions of overdraft, as present water management practices would probably result in adverse environmental, social or economic impacts, particularly in the western portion of the basin.

Madera Basin. Overdraft in the basin was estimated at 123 000 cubic dekametres (100,000 acre-feet) annually in 1975, based upon the DWR Mid-Valley Canal Areal Study. Madera Irrigation District, which lies in the central portion of the basin, presently has a balanced water budget due to CVP deliveries from the Madera Canal and an estimated 29 600 cubic-dekametre (24,000 acre-foot) annual new water yield from the recently completed Hidden Dam on the Fresno River. However, ground water meets nearly all applied water demands in the area west of Madera Irrigation District, where agricultural development is growing rapidly and maximum ground water level declines amounted to over 2 metres (6 feet) per year for the period 1970-75. Heavy pumping is also occurring to the east of Madera Irrigation District, where cropped acreage has increased by 10 100 hectares (25,000 acres) during the period 1958-74 and where only minor amounts of surface water are available. The

Commodity*	Commodity Value Per Acre Harvested***	SDWA Commodity Acreage**	SDWA Commodity Value	Unrepresented Commodity Acreage**	Unrepresented Commodity Value	CDWA Commodity Acreage**	CDWA Commodity Value	Total Acreage	Total Value
ALFALFA	$ 1,297.50	34,055.55	$ 44,187,076.13	3,754.45	$ 4,871,392.65	16,239.58	$ 21,070,855.05	54,049.58	$ 70,129,323.82
ALMOND	$ 3,453.52	2,858.48	$ 9,871,817.85	-	$ -	-	$ -	2,858.48	$ 9,871,817.85
APPLE	$ 12,214.86	14.69	$ 179,436.29	101.79	$ 1,243,356.71	-	$ -	116.48	$ 1,422,793.00
APRICOT	$ 3,726.90	169.17	$ 630,479.67	37.54	$ 139,914.53	-	$ -	206.71	$ 770,394.21
ASPARAGUS	$ 2,575.20	3,747.15	$ 9,649,660.68	23.01	$ 59,257.41	4,314.13	$ 11,109,747.58	8,084.29	$ 20,818,665.67
BARLEY	$ 570.90	89.66	$ 51,186.89	-	$ -	39.36	$ 22,470.62	129.02	$ 73,657.52
BARLEY FOR/FOD	$ 320.49	31.51	$ 10,098.64	-	$ -	289.47	$ 92,772.24	320.98	$ 102,870.88
BEAN DRIED	$ 1,137.78	2,873.22	$ 3,269,092.25	-	$ -	109.89	$ 125,030.64	2,983.11	$ 3,394,122.90
BEAN LIMA	$ 1,239.85	853.09	$ 1,057,703.64	-	$ -	-	$ -	853.09	$ 1,057,703.64
BEAN SUCCULENT	$ 1,137.78	461.98	$ 525,631.60	-	$ -	151.95	$ 172,885.67	613.93	$ 698,517.28
BEAN UNSPECIFD	$ 577.08	81.50	$ 47,032.02	62.96	$ 36,330.42	-	$ -	144.46	$ 83,362.44
BEANS, LIMA	$ 1,239.85	27.12	$ 33,624.73	-	$ -	-	$ -	27.12	$ 33,624.73
BEET	$ 4,541.00	728.08	$ 3,306,211.28	-	$ -	294.21	$ 1,336,007.61	1,022.29	$ 4,642,218.89
BEETS, RED	$ 4,541.00	18.70	$ -	-	$ -	-	$ -	18.70	$ 84,916.70
BLUEBERRY	$ 14,000.00	51.16	$ 716,240.00	-	$ -	994.90	$ 13,928,600.00	1,046.06	$ 14,644,840.00
BOK CHOY LSE LF	$ 4,541.00	338.03	$ 1,534,994.23	-	$ -	96.95	$ 440,249.95	434.98	$ 1,975,244.18
BROCCOLI	$ 4,541.00	777.08	$ 3,528,720.28	-	$ -	308.56	$ 1,401,170.96	1,085.64	$ 4,929,891.24
CABBAGE	$ 4,541.00	815.58	$ 3,703,548.78	-	$ -	375.54	$ 1,705,327.14	1,191.12	$ 5,408,875.92
CELERIAC	$ 4,541.00	575.31	$ 2,612,482.71	-	$ -	228.95	$ 1,039,661.95	804.26	$ 3,652,144.66
CELERY	$ 4,541.00	767.48	$ 3,485,126.68	-	$ -	294.21	$ 1,336,007.61	1,061.69	$ 4,821,134.29
CHERRY	$ 11,675.04	14.93	$ 174,308.35	158.35	$ 1,848,747.25	32.50	$ 379,438.80	205.78	$ 2,402,494.40
CILANTRO	$ 4,541.00	30.00	$ 136,230.00	-	$ -		$ -	30.00	$ 136,230.00
COLLARD	$ 4,541.00	600.96	$ 2,728,959.36	-	$ -	202.95	$ 921,595.95	803.91	$ 3,650,555.31
CORN FOR/FOD	$ 690.58	15,322.61	$ 10,581,488.01	8,410.83	$ 5,808,349.25	39,981.62	$ 27,610,507.14	63,715.06	$ 44,000,344.41
CORN, HUMAN CON	$ 3,379.47	1,818.58	$ 6,145,836.55	-	$ -	217.21	$ 734,054.68	2,035.79	$ 6,879,891.23
CUCUMBER	$ 1,106.00	1,259.85		268.43		294.21		1,822.49	$ 2,015,674.38
FORAGE HAY/SLGE	$ 224.42	1,405.84	$ 315,498.61	-	$ -	228.04	$ 51,176.74	1,633.88	$ 366,675.35
FRUIT, BERRY	$ 7,008.25	5.20	$ 36,442.89	-	$ -		$ -	5.20	$ 36,442.89
GRAPE	$ 470.00	1,253.79	$ 589,281.30	44.26	$ 20,800.84		$ -	1,298.05	$ 610,082.14
GRAPE, WINE	$ 2,434.23	1,756.56	$ 4,275,871.05	2,296.55	$ 5,590,341.37	4,423.96	$ 10,768,936.15	8,477.07	$ 20,635,148.57
HERB, SPICE	$ 4,541.00	675.19	$ 3,066,037.79	-	$ -	268.21	$ 1,217,941.61	943.40	$ 4,283,979.40
KALE	$ 4,541.00	248.74	$ 1,129,528.34	-	$ -		$ -	248.74	$ 1,129,528.34
LEEK	$ 4,541.00	711.04	$ 3,228,832.64	-	$ -	270.21	$ 1,227,023.61	981.25	$ 4,455,856.25
LEGUME FOR/FOD	$ 577.08		$ -	72.32	$ 41,732.81		$ -	72.32	$ 41,732.81
LETTUCE HEAD	$ 4,541.00	58.72	$ 266,647.52	-	$ -		$ -	58.72	$ 266,647.52
LETTUCE LEAF	$ 4,541.00	756.86	$ 3,436,901.26	-	$ -	294.21	$ 1,336,007.61	1,051.07	$ 4,772,908.87
MELON	$ 3,799.04	5.37	$ 20,400.84	-	$ -		$ -	5.37	$ 20,400.84
MUSTARD	$ 4,541.00	514.90	$ 2,338,160.90	-	$ -	202.95	$ 921,595.95	717.85	$ 3,259,756.85
N-GRNHS PLANT	unknown	0.12		-				0.12	
N-OUTDR PLANTS	unknown	4.89		-		13.08		17.97	
OAT	$ 224.42	1,060.22	$ 237,934.57	-	$ -	833.81	$ 187,123.64	1,894.03	$ 425,058.21
OAT FOR/FOD	$ 224.42	5,105.34	$ 1,145,740.40	558.41	$ 125,318.42	1,428.21	$ 320,518.89	7,091.96	$ 1,591,577.71
OAT SEED	$ 575.00		$ -	-	$ -	288.43	$ 165,847.25	288.43	$ 165,847.25
OLIVE	$ 7,008.25	269.70	$ 1,890,124.33	-	$ -	57.00	$ 399,470.10	326.70	$ 2,289,594.43
ONION DRY ETC	$ 4,490.88	760.00	$ 3,413,068.80	-	$ -	294.20	$ 1,321,216.90	1,054.20	$ 4,734,285.70
ONION GREEN	$ 4,541.00	593.76	$ 2,696,264.16	-	$ -	294.20	$ 1,335,962.20	887.96	$ 4,032,226.36

ONION SEED	$ 11,073.25	28.51	$ 315,698.31	-	$ -	10.24	$ 113,390.06	**38.75**	**$ 429,088.38**
OP-TURF	$ 10,000.00	243.69	$ 2,436,900.00	-	$ -	1,495.89	$ 14,958,900.00	**1,739.58**	**$ 17,395,800.00**
PARSLEY	$ 4,541.00	1,361.80	$ 6,183,933.80	-	$ -	294.21	$ 1,336,007.61	**1,656.01**	**$ 7,519,941.41**
PASTURELAND	$ 34.00	1,365.66	$ 46,432.44	367.14	$ 12,482.64	330.24	$ 11,228.16	**2,063.04**	**$ 70,143.24**
PEAR	$ 3,500.00		$ -	21.00	$ 73,500.00		$ -	**21.00**	**$ 73,500.00**
PECAN	$ 2,941.90	18.51	$ 54,454.57	-	$ -		$ -	**18.51**	**$ 54,454.57**
PEPPER FRUITNG	$ 5,738.82	633.49	$ 3,635,485.08	53.51	$ 307,071.63	331.11	$ 1,900,180.69	**1,018.11**	**$ 5,842,737.40**
PISTACHIO	$ 2,941.90	18.03	$ 53,042.46	-	$ -		$ -	**18.03**	**$ 53,042.46**
PLUM	$ 5,790.82		$ -	0.97	$ 5,599.72		$ -	**0.97**	**$ 5,599.72**
POMEGRANATE	$ 7,008.25	5.21	$ 36,512.97	-	$ -		$ -	**5.21**	**$ 36,512.97**
POTATO	$ 6,135.50		$ -	-	$ -	2,083.95	$ 12,786,075.23	**2,083.95**	**$ 12,786,075.23**
POTATO SEED	$ 575.00		$ -	-	$ -	318.85	$ 183,338.75	**318.85**	**$ 183,338.75**
PUMPKIN	$ 3,600.00	1,426.20	$ 5,134,320.00	198.59	$ 714,914.64		$ -	**1,624.79**	**$ 5,849,234.64**
RICE	$ 1,100.55		$ -	363.58	$ 400,133.24	2,779.12	$ 3,058,560.52	**3,142.70**	**$ 3,458,693.75**
RYEGRAS FOR/FOD	$ 320.49	268.85	$ 86,163.74	-	$ -	188.22	$ 60,322.63	**457.07**	**$ 146,486.36**
SAFFLOWER	$ 422.50	3,319.65	$ 1,402,552.13	109.24	$ 46,152.55	827.07	$ 349,437.08	**4,255.96**	**$ 1,798,141.75**
SPINACH	$ 4,541.00	147.96	$ 671,886.36	-	$ -		$ -	**147.96**	**$ 671,886.36**
SQUASH	$ 4,541.00	560.01	$ 2,543,005.41	112.68	$ 511,670.34	217.21	$ 986,350.61	**889.90**	**$ 4,041,026.36**
SQUASH, WINTER	$ 4,541.00	121.70	$ 552,639.70	-	$ -		$ -	**121.70**	**$ 552,639.70**
STONE FRUIT	$ 5,790.82	3.38		-				**3.38**	**$ 19,572.97**
STRAWBERRY	$ 4,541.00	0.81	$ 3,678.21	5.00	$ 22,704.09		$ -	**5.81**	**$ 26,382.30**
SUDANGRASS	$ 224.42	1,326.21	$ 297,628.05	-	$ -	78.23	$ 17,556.38	**1,404.44**	**$ 315,184.42**
SUNFLOWER	$ 96.09		$ -	-	$ -	1,490.86	$ 143,257.76	**1,490.86**	**$ 143,257.76**
SWEET BASIL	$ 4,541.00	108.64	$ 493,334.24	-	$ -		$ -	**108.64**	**$ 493,334.24**
SWISS CHARD	$ 4,541.00	376.21	$ 1,708,369.61	-	$ -	294.21	$ 1,336,007.61	**670.42**	**$ 3,044,377.22**
TOMATO	$ 4,225.84	328.20	$ 1,386,920.69	476.12	$ 2,011,986.23	1,092.71	$ 4,617,617.63	**1,897.03**	**$ 8,016,524.55**
TOMATO PROCESS	$ 2,488.50	17,541.62	$ 43,652,321.37	1,278.72	$ 3,182,098.20	5,182.60	$ 12,896,900.10	**24,002.94**	**$ 59,731,319.67**
TURF/SOD	$ 10,000.00		$ -	-	$ -	379.37	$ 3,793,700.00	**379.37**	**$ 3,793,700.00**
TURNIP	$ 4,541.00	54.39	$ 246,984.99	-	$ -		$ -	**54.39**	**$ 246,984.99**
UNCULTIVATED AG	$ -		$ -	70.47	$ -	611.91	$ -	**682.38**	**$ -**
VEGETABLE	$ 4,541.00		$ -	-	$ -	1.44	$ 6,539.04	**1.44**	**$ 6,539.04**
WALNUT	$ 2,941.90	1,732.99	$ 5,098,283.28	72.96	$ 214,641.91	414.94	$ 1,220,711.99	**2,220.89**	**$ 6,533,637.17**
WATERMELON	$ 9,120.00	885.10	$ 8,072,112.00	-	$ -		$ -	**885.10**	**$ 8,072,112.00**
WHEAT	$ 570.90	5,465.34	$ 3,120,162.61	2,792.39	$ 1,594,175.05	4,028.97	$ 2,300,138.97	**12,286.70**	**$ 7,014,476.63**
WHEAT FOR/FOD	$ 570.90	2,816.26	$ 1,607,802.83	-	$ -	1,141.81	$ 651,859.33	**3,958.07**	**$ 2,259,662.16**
	Totals	**112,826.44**	**$ 207,195,986.16**	**18,845.89**	**$ 27,073,854.96**	**91,370.14**	**$ 161,234,574.08**	**223,042.47**	**$ 421,504,467.22**

* Commodities and farmed acreages were extracted from the 2008 San Joaquin County Agricultural Commissioner's Office Pesticide Permitting Program Database provided by Ferdinand Pura,Geographic Information Systems Specialist I. Only acreages inside the Legal Delta in San Joaquin County were extracted.

** Spatial boundaries for the analysis were obtained from the San Joaquin County Community Development Department Geographic Information Systems Division. For the purposes of the analysis, the South Delta Water Agency boundaries were clipped to only include the portions in the legal Delta. Any irrigation and water district acreage within the South Delta Water Agency have been aggregated with the South Delta Water Agency. Any irrigation and water district acreage within the Central Delta Water Agency have been aggregated with the Central Delta Water Agency, Irrigation or water district acreage outside of the South Delta Water Agency or Central Delta Water Agency and inside the legal Delta are collectively grouped as Unrepresented.

*** Commodity valuation was obtained from the San Joaquin County 2007 Annual Crop Report. Prices for Sod were obtained directly from the Agricultural Commissioner's office. The lowest value per acre was used.

Delta Crop Value Summary

			% of County Total
SDWA*	Acreage	112,826	22%
	Value	$ 207,195,986	10%
CDWA*	Acreage	91,370	18%
	Value	$ 161,234,574	8%
Unrepresented*	Acreage	18,846	4%
	Value	$ 24,433,297	1%
Delta Total	Acreage	223,042	43%
	Value	$ 421,504,467	21%
County Total	Acreage	520,172	100%
	Value	$ 2,005,793,000	100%

Top Ten (10) Delta Crops Based on Reported Acreage**	
CORN FOR/FOD	63,715
ALFALFA	54,050
TOMATO PROCESS	24,003
WHEAT	12,287
GRAPE, WINE	8,477
ASPARAGUS	8,084
OAT FOR/FOD	7,092
SAFFLOWER	4,256
WHEAT FOR/FOD	3,958
RICE	3,143

Top Ten (10) Delta Crops Based on Estimated Value**	
ALFALFA	$ 70,129,324
TOMATO PROCESS	$ 59,731,320
CORN FOR/FOD	$ 44,000,344
ASPARAGUS	$ 20,818,666
GRAPE, WINE	$ 20,635,149
OP-TURF	$ 17,395,800
BLUEBERRY	$ 14,644,840
POTATO	$ 12,786,075
ALMOND	$ 9,871,818
WATERMELON	$ 8,072,112

* Commodities and farmed acreages were extracted from the 2008 San Joaquin County Agricultural Commissioner's Office Pesticide Permitting Program Database provided by Ferdinand Pura,Geographic Information Systems Specialist I. Only acreages inside the Legal Delta in San Joaquin County were extracted.

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*** Commodity valuation was obtained from the San Joaquin County 2007 Annual Crop Report. Prices for Turf were obtained directly from the Agricultural Commissioner's office. The lowest value per acre was used.

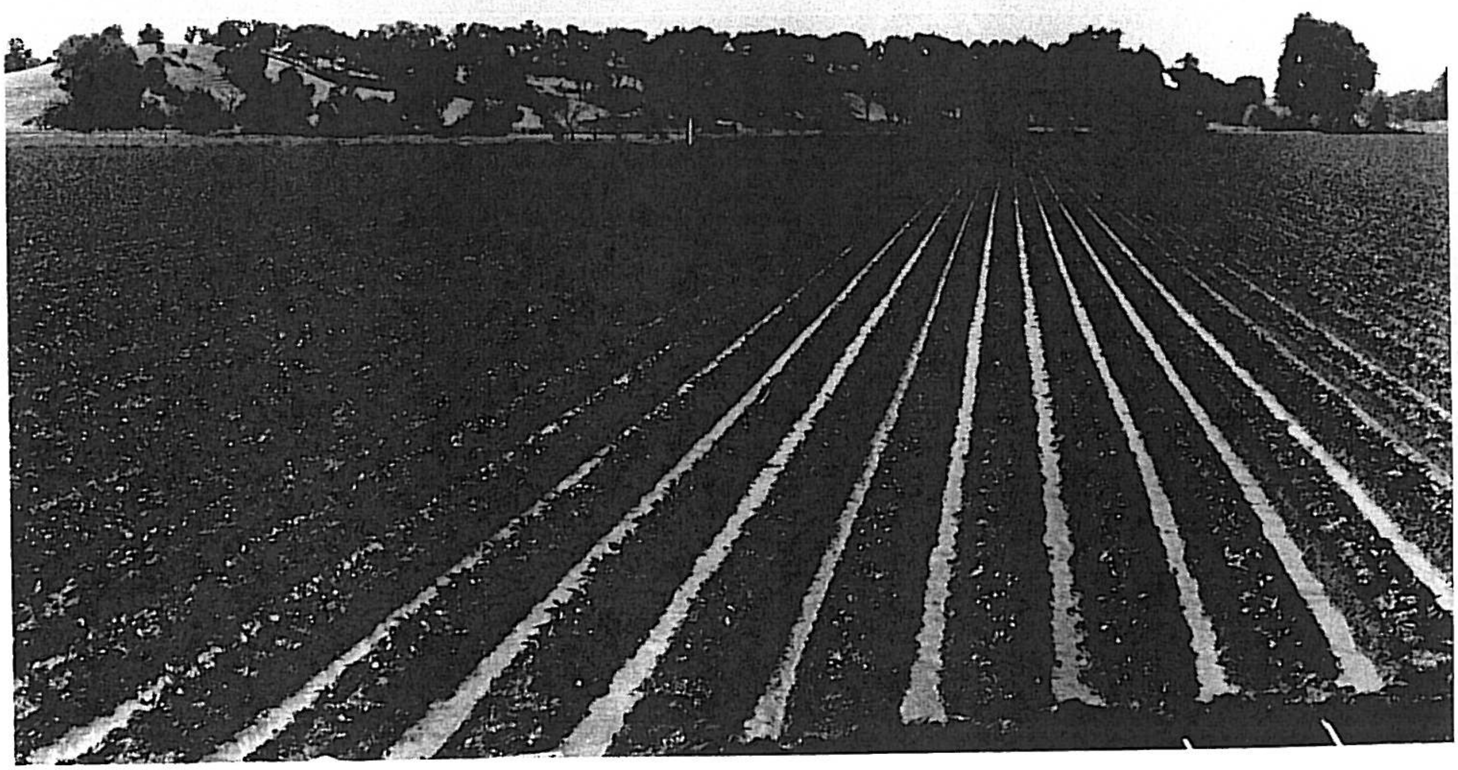
United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with the Regents of the University of California (Agricultural Experiment Station) and the California Department of Conservation

Soil Survey of San Joaquin County, California

SJC - 7



Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner. Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Soil Conservation Service.

About 494,000 acres in the survey area, or nearly 55 percent of the total acreage, would meet the soil requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

A recent trend in land use in some parts of the county has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 6. This list does not constitute a recommendation for a particular land use. See appendix A for the specific criteria used to determine prime farmland. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units listed in table 6 meet the soil requirements for prime farmland where irrigation water is available. On some soils included in the list, additional measures are needed to overcome a hazard or limitation, such as flooding or wetness, in order to meet the requirements for prime farmland. The need for these measures is indicated after the map unit name. Onsite evaluation is needed to determine whether or not these limitations have been overcome by corrective measures.

Appendix A

Prime Farmlands

Prime Farmland is land best suited for producing food, feed, forage, fiber, and oilseed crops and also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land but not urban builtup land or water). It has the soil quality, growing season and moisture supply needed to produce sustained high yields of crops economically when treated and managed, including water management, according to modern farming methods.

Prime Farmland meets all the following criteria:

1. The soils have:

A. Aquic, udic, ustic, or xeric moisture regimes and an available water capacity of at least 4 inches (10 cm) per 40 to 60 inches (1 to 1.52 meters) of soil to produce the commonly grown cultivated crops (cultivated crops include, but are not limited to, grain, forage, fiber, oilseed, sugarbeets, vegetables, orchard, vineyard, and bush fruit crops) adapted to the region in 7 or more years out of 10; or

B. Xeric, ustic, aridic, or torric moisture regimes in which the available water capacity is at least 4 inches (10 cm) per 40 to 60 inches (1 to 1.52 meters) of soil and the area has a developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown) and of adequate quality; and,

2. The soils have a temperature regime that is frigid, mesic, thermic or hyperthermic (pergelic and cryic regimes are excluded). These are soils that, at a depth of 20 inches (50 cm), have a mean annual temperature higher than 32° F (0° C). In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47° F (8° C); in soils that have no O horizon, the mean summer temperature is higher than 59° F (15° C); and,

3. The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1 meter); and,

4. The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and,

5. The soils can be managed so that, in all horizons within a depth of 40 inches (1 meter), during part of each year the conductivity of the saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15; and,

6. The soils are not flooded frequently during the growing season (less often than once in 2 years); and,

7. The product of K (erodibility factor) x percent slope is less than 2.0; and,

8. The soils have a permeability rate of at least 0.06 inch (0.15 cm) per hour in the upper 20 inches (50 cm) and the mean annual soil temperature at a depth of 20 inches (50 cm) is less than 59° F (15° C); the permeability rate is not a limiting factor if the mean annual soil temperature is 59° F (15° C) or higher; and,

9. Less than 10 percent of the surface layer [upper 6 inches (15 cm)] in these soils consists of rock fragments coarser than 3 inches (7.6 cm); and,

10. The soils have a minimum rooting depth of 40 inches (1 meter).

TABLE 6.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
101	Acampo sandy loam, 0 to 2 percent slopes (where irrigated)
106	Archerdale very fine sandy loam, 0 to 2 percent slopes, overwashed (where irrigated)
107	Archerdale clay loam, 0 to 2 percent slopes (where irrigated)
110	Boggiano clay loam, 0 to 2 percent slopes (where irrigated)
111	Bruella sandy loam, 0 to 2 percent slopes (where irrigated)
112	Bruella sandy loam, hard substratum, 0 to 2 percent slopes (where irrigated)
113	Calla clay loam, 2 to 8 percent slopes (where irrigated)
117	Capay clay loam, 0 to 2 percent slopes (where irrigated)
118	Capay clay, 0 to 2 percent slopes (where irrigated)
119	Capay clay, 2 to 5 percent slopes (where irrigated)
121	Capay clay, wet, 0 to 2 percent slopes (where irrigated)
123	Carbona clay loam, 2 to 8 percent slopes (where irrigated)
127	Chuloak coarse sandy loam, 0 to 2 percent slopes (where irrigated)
128	Cogna fine sandy loam, 0 to 2 percent slopes, overwashed (where irrigated)
129	Cogna loam, 0 to 2 percent slopes (where irrigated)
130	Columbia fine sandy loam, drained, 0 to 2 percent slopes (where irrigated)
131	Columbia fine sandy loam, partially drained, 0 to 2 percent slopes, occasionally flooded (where irrigated)
132	Columbia fine sandy loam, channeled, partially drained, 0 to 2 percent slopes, frequently flooded (where irrigated and either protected from flooding or not frequently flooded during the growing season)
133	Columbia fine sandy loam, clayey substratum, partially drained, 0 to 2 percent slopes (where irrigated)
138	Cosumnes silty clay loam, drained, 0 to 2 percent slopes (where irrigated)
139	Cosumnes silty clay loam, drained, 0 to 2 percent slopes, occasionally flooded (where irrigated)
140	Coyotecreek silt loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
152	Egbert mucky clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
153	Egbert silty clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
154	Egbert silty clay loam, sandy substratum, partially drained, 0 to 2 percent slopes (where irrigated)
156	El Solyo clay loam, 0 to 2 percent slopes (where irrigated)
158	Finrod clay loam, 0 to 2 percent slopes (where irrigated)
166	Grangeville fine sandy loam, partially drained, 0 to 2 percent slopes (where irrigated)
167	Grangeville clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
168	Guard clay loam, 0 to 2 percent slopes (where irrigated and drained)
169	Guard clay loam, drained, 0 to 2 percent slopes (where irrigated)
170	Hicksville loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
171	Hicksville loam, bedrock substratum, 2 to 5 percent slopes, occasionally flooded (where irrigated)
172	Hicksville gravelly loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
173	Hollenbeck silty clay, 0 to 2 percent slopes (where irrigated)
174	Hollenbeck clay, 1 to 3 percent slopes (where irrigated)
175	Honcut sandy loam, 0 to 2 percent slopes (where irrigated)
182	Jahant loam, 0 to 2 percent slopes (where irrigated)
183	Jahant loam, 2 to 8 percent slopes (where irrigated)
189	Kingdon fine sandy loam, 0 to 2 percent slopes (where irrigated)
190	Kingile muck, partially drained, 0 to 2 percent slopes (where irrigated)
191	Kingile-Ryde complex, partially drained, 0 to 2 percent slopes (where irrigated)
197	Merritt silty clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
198	Merritt silty clay loam, partially drained, 0 to 2 percent slopes, occasionally flooded (where irrigated)
201	Nord loam, 0 to 2 percent slopes (where irrigated)
204	Peltier mucky clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
205	Peltier mucky clay loam, organic substratum, partially drained, 0 to 2 percent slopes (where irrigated)
215	Pleito clay loam, 2 to 8 percent slopes (where irrigated)
222	Reiff fine sandy loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
223	Reiff loam, 0 to 2 percent slopes (where irrigated)
224	Rindge mucky silt loam, partially drained, 0 to 2 percent slopes, overwashed (where irrigated)

TABLE 6.--PRIME FARMLAND--Continued

Map symbol	Soil name
225	Rindge muck, partially drained, 0 to 2 percent slopes (where irrigated)
230	Ryde clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
231	Ryde silty clay loam, organic substratum, partially drained, 0 to 2 percent slopes (where irrigated)
232	Ryde clay loam, sandy substratum, partially drained, 0 to 2 percent slopes (where irrigated)
233	Ryde-Peltier complex, partially drained, 0 to 2 percent slopes (where irrigated)
234	Sailboat silt loam, drained, 0 to 2 percent slopes (where irrigated)
235	Sailboat silt loam, drained, 0 to 2 percent slopes, occasionally flooded (where irrigated)
243	Scribner clay loam, partially drained, 0 to 2 percent slopes (where irrigated)
244	Scribner clay loam, sandy substratum, partially drained, 0 to 2 percent slopes (where irrigated)
246	Shima muck, partially drained, 0 to 2 percent slopes (where irrigated)
247	Shinkee muck, partially drained, 0 to 2 percent slopes (where irrigated)
248	Stockton fine sandy loam, 0 to 2 percent slopes, overwashed (where irrigated)
249	Stockton silty clay loam, 0 to 2 percent slopes, overwashed (where irrigated)
250	Stockton clay, 0 to 2 percent slopes (where irrigated)
252	Stomar clay loam, 0 to 2 percent slopes (where irrigated)
253	Stomar clay loam, wet, 0 to 2 percent slopes (where irrigated)
256	Tokay fine sandy loam, 0 to 2 percent slopes (where irrigated)
261	Valdez silt loam, organic substratum, partially drained, 0 to 2 percent slopes (where irrigated)
263	Venice mucky silt loam, partially drained, 0 to 2 percent slopes, overwashed (where irrigated)
264	Venice muck, partially drained, 0 to 2 percent slopes (where irrigated)
265	Veritas sandy loam, partially drained, 0 to 2 percent slopes (where irrigated)
266	Veritas fine sandy loam, 0 to 2 percent slopes (where irrigated)
267	Veritas silty clay loam, 0 to 2 percent slopes, overwashed (where irrigated)
268	Vernalis clay loam, 0 to 2 percent slopes (where irrigated)
269	Vernalis clay loam, wet, 0 to 2 percent slopes (where irrigated)
272	Vina fine sandy loam, 0 to 2 percent slopes (where irrigated)
273	Webile muck, partially drained, 0 to 2 percent slopes (where irrigated)
281	Zacharias clay loam, 0 to 2 percent slopes (where irrigated)
282	Zacharias gravelly clay loam, 0 to 2 percent slopes (where irrigated)
283	Zacharias gravelly clay loam, 2 to 8 percent slopes (where irrigated)

SAN JOAQUIN COUNTY
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THOMAS R. FLINN
DIRECTOR OF PUBLIC WORKS
FLOOD CONTROL ENGINEER

August 19, 2008

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Mr. Arthur G. Baggett, Jr., Board Member
State Water Resources Control Board
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SUBJECT: MOTION FOR RECONSIDERATION OF ORDER WR 2008-0029-EXEC

Dear Board Members:

The County of San Joaquin (County) states its support for the Request for Reconsideration of WR 2008-0029-EXEC, granting a Temporary Urgency Change Petition to the California Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation), which was submitted by the South Delta Water Agency and Lafayette Ranch, Inc., on July 18, 2008.

Of concern to the County are the actions of the DWR and the Reclamation regarding their failure to comply with their water right permit terms, including D 1641 and Order WR 2006-0006.

State Board Decision 1641 granted DWR and Reclamation the authority to use each other's Delta diversion facilities or Joint Points of Diversion (JPOD). Use of the JPOD is authorized only when the projects are in compliance with their respective permit terms (D-1641 at p. 150). DWR and Reclamation's permits require each entity to meet established salinity objectives at several monitoring points within the Delta. Specifically, Reclamation is responsible for meeting the objectives at Vernalis, and both Reclamation and DWR are responsible for meeting the objectives at the San Joaquin River/Brant Road Bridge, Old River near Middle River, and Old River at the Tracy Road Bridge.

A Cease and Desist Order WR 2006-0006 (CDO) was issued as a result of a Cease and Desist hearing, which concerned DWR and Reclamation's anticipated violation of the interior Delta salinity objectives in upcoming years, and whether or not JPOD could be utilized if the terms and conditions of DWR and Reclamation's permits were violated. In the CDO, the State Water Board clearly maintained that JPOD could only be utilized when DWR and Reclamation were ". . . in compliance with all of the conditions of their water rights and licenses including . . . the 0.7 EC objective(s) [in the southern Delta]" (CDO at p. 32).

In 2007, Reclamation and DWR predicted that the south Delta salinity objectives would be violated and reported such potential exceedences to Dorothy Rice, your Executive Director, by letter on April 24, 2007. At this time, Reclamation and DWR represented that the potential exceedences of the water quality objectives were "beyond the control" of Reclamation and DWR. Ms. Rice disagreed with this representation by Reclamation and DWR and informed these export project operators by letter, dated May 11, 2007, that additional actions within their control could include "additional releases from upstream reservoirs, recirculation of water through the San Joaquin River and purchases or exchanges of water from other entities." The County concurs with this assessment. Ms. Rice demanded that within two weeks from her letter of May 11, 2007, DWR and Reclamation provide to the State Water Board "a feasibility analysis of how increased San Joaquin River flows could be employed to improve southern Delta salinity." It is our understanding that Reclamation and DWR have failed to provide such feasibility analysis. In June of 2008, DWR notified the State Water Board that, once again, it predicted violation of the salinity objectives. On July 1, 2008, Board Member Arthur G. Baggett granted the Urgency Petition in Order WR 2008-0029-EXEC.

It is the County's position that the Urgency Petition was granted in error, and should be reconsidered. It is clear that JPOD cannot be utilized when permit terms and conditions are being violated by DWR and Reclamation. This fact was clearly set forth in the CDO as well as in a letter to DWR and Reclamation by State Water Board Executive Director Dorothy Rice, dated November 28, 2007, in which Director Rice stated:

> ". . . DWR and Reclamation may petition the State Water Resources Control Board to change the permit and license requirements applicable to their use of the JPOD. If DWR or Reclamation are considering submitting such a change petition, *I suggest that they submit it as soon as possible to assure that the matter can be considered prior to any need for JPOD diversions next year.*" (emphasis added)

The direction to DWR and Reclamation to petition for a temporary change in their permit if they anticipated that salinity standards would not be met, and to do so well ahead of time, is abundantly clear. Rather than heed this advice, DWR and Reclamation neglected to undertake the appropriate process to change their permits in a timely manner, a process that calls for more detailed review by the State Water Board as well as a public notice and comment period and, instead, elected to wait until the last minute, thereby causing the alleged "emergency" situation that purportedly justified the Urgency Petition. A determination of urgency need is precluded where the Board, in its judgment, concludes that the petitioner has not exercised due diligence either (1) in petitioning for a [permit] change; or (2) in pursuing that petition for change (*Wat. Code* §1435(c)). Given the myriad of circumstances that created the strong likelihood that DWR and Reclamation would violate the salinity standards in 2008 (low precipitation, recent court decisions, and violations in 2007), and given that DWR and Reclamation were cautioned to begin the petition process a full seven months prior to the filing of the Urgency Petition, it cannot be reasonably asserted that DWR and Reclamation made a showing of "due diligence" justifying this situation as clearly maintained that JPOD could only be utilized when DWR and Reclamation were ". . . in compliance with all of the conditions of their water rights and licenses including . . . the 0.7 EC objective(s) [in the southern Delta]" (CDO at p. 32).

In 2007, Reclamation and DWR predicted that the south Delta salinity objectives would be violated and reported such potential exceedences to Dorothy Rice, your Executive Director, by letter on April 24, 2007. At this time, Reclamation and DWR represented that the potential exceedences of the water quality objectives were "beyond the control" of Reclamation and DWR. Ms. Rice disagreed with this representation by Reclamation and DWR and informed these export project operators by letter, dated May 11, 2007, that additional actions within their control could include "additional releases from upstream reservoirs, recirculation of water through the San Joaquin River and purchases or exchanges of water from other entities." The County concurs with this assessment. Ms. Rice demanded that within two weeks from her letter of May 11, 2007, DWR and Reclamation provide to the State Water Board "a feasibility analysis of how increased San Joaquin River flows could be employed to improve southern Delta salinity." It is our understanding that Reclamation and DWR have failed to provide such feasibility analysis. In June of 2008, DWR notified the State Water Board that, once again, it predicted violation of the salinity objectives. On July 1, 2008, Board Member Arthur G. Baggett granted the Urgency Petition in Order WR 2008-0029-EXEC.

It is the County's position that the Urgency Petition was granted in error, and should be reconsidered. It is clear that JPOD cannot be utilized when permit terms and conditions are being violated by DWR and Reclamation. This fact was clearly set forth in the CDO as well as in a letter to DWR and Reclamation by State Water Board Executive Director Dorothy Rice, dated November 28, 2007, in which Director Rice stated:

> ". . . DWR and Reclamation may petition the State Water Resources Control Board to change the permit and license requirements applicable to their use of the JPOD. If DWR or Reclamation are considering submitting such a change petition, *I suggest that they submit it as soon as possible to assure that the matter can be considered prior to any need for JPOD diversions next year.*" (emphasis added)

The direction to DWR and Reclamation to petition for a temporary change in their permit if they anticipated that salinity standards would not be met, and to do so well ahead of time, is abundantly clear. Rather than heed this advice, DWR and Reclamation neglected to undertake the appropriate process to change their permits in a timely manner, a process that calls for more detailed review by the State Water Board as well as a public notice and comment period and, instead, elected to wait until the last minute, thereby causing the alleged "emergency" situation that purportedly justified the Urgency Petition. A determination of urgency need is precluded where the Board, in its judgment, concludes that the petitioner has not exercised due diligence either (1) in petitioning for a [permit] change; or (2) in pursuing that petition for change (*Wat. Code* §1435(c)). Given the myriad of circumstances that created the strong likelihood that DWR and Reclamation would violate the salinity standards in 2008 (low precipitation, recent court decisions, and violations in 2007), and given that DWR and Reclamation were cautioned to begin the petition process a full seven months prior to the filing of the Urgency Petition, it cannot be reasonably asserted that DWR and Reclamation made a showing of "due diligence" justifying this situation as an actual "urgency need." As a result, DWR and Reclamation's attempt to circumvent the system, by alleging an urgency need that they themselves created, is contrary to law and does not support the issuance of a Temporary Urgency Change for the water rights permits at issue. The DWR and Reclamation have endlessly delayed, through both wet and dry periods, dealing with the very real problem of salinity in the San Joaquin River. Reclamation and DWR have been repeatedly told and ordered to address the problem, but have continued to ignore all advice and have failed to follow orders. The time has come to deal with the salinity problem, and that time is now.

Furthermore, it is the County's position that DWR and Reclamation have failed to take actions which are available to, and within the control of, both parties which would allow them to meet the interior Delta salinity standards, which would then allow them to operate the JPOD legally, as opposed to continuing to operate the JPOD in disregard of the law. As is pointed out in the South Delta Water Agency's Request for Reconsideration, there are actions the DWR and Reclamation could take, including but not limited to recirculation, which would allow Reclamation and DWR to meet their requirements for water quality at the interior points and allow the utilization of the JPOD. The County supports a solution of this nature, not ignoring the law. The County is not opposed to the use of the JPOD but rather wants the rules for the use of the JPOD, established by D-1641, to be enforced.

For the reasons stated above, San Joaquin County supports South Delta Water Agency's Request For reconsideration in the matter of Order WR 2008-0029-EXEC should be granted, and the issuance of a Temporary Urgency Change to the California Department of Water Resources and Reclamation's water rights permits allowing the Department of Water Resources and the Bureau of Reclamation to operate the Joint Points of Diversion, in direct violation of the terms and conditions of the underlying permits, as well as D-1641 and the Cease and Desist Order (WR 2006-0006) should be reconsidered.

Sincerely,

Ken Vogel

KEN VOGEL, CHAIRMAN
Board of Supervisors
County of San Joaquin

KV:DG:mk
WR-8H021-M4

c: DeeAnne Gillick, Neumiller and Beardslee
T.R. Flinn, Director of Public Works
Thomas M. Gau, Deputy Chief Deputy Director
C. Mel Lytle, Ph.D., Water Resource Coordinator